COUNTY OF SAN DIEGO
DEPARTMENT OF PUBLIC WORKS

PROCEDURE MANUAL FOR THE PREPARATION AND CHECKING OF STREET IMPROVEMENT AND GRADING PLANS

April 2011

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FORWARD

Purpose

This manual was prepared by the Department of Public Works (DPW), Land Development Division. It establishes uniform procedures for the preparation and plan checking of street improvement plans and grading plans and is neither intended as, nor does it establish, a legal standard for these functions.

The enclosed material is to assist the engineer-of-work in preparing these plans and the DPW staff for their review.

This manual is neither a textbook nor a substitute for engineering knowledge, experience, or judgment. It includes techniques as well as exhibits and tables not ordinarily found in textbooks. These exhibits are intended as aids in the quick solution of field and office problems. Except for new developments, no attempt is made to detail basic engineering techniques; for these, standard textbooks should be used.

Original manual prepared December 1998 by Marty Eslambolchi, R.C.E. 55525

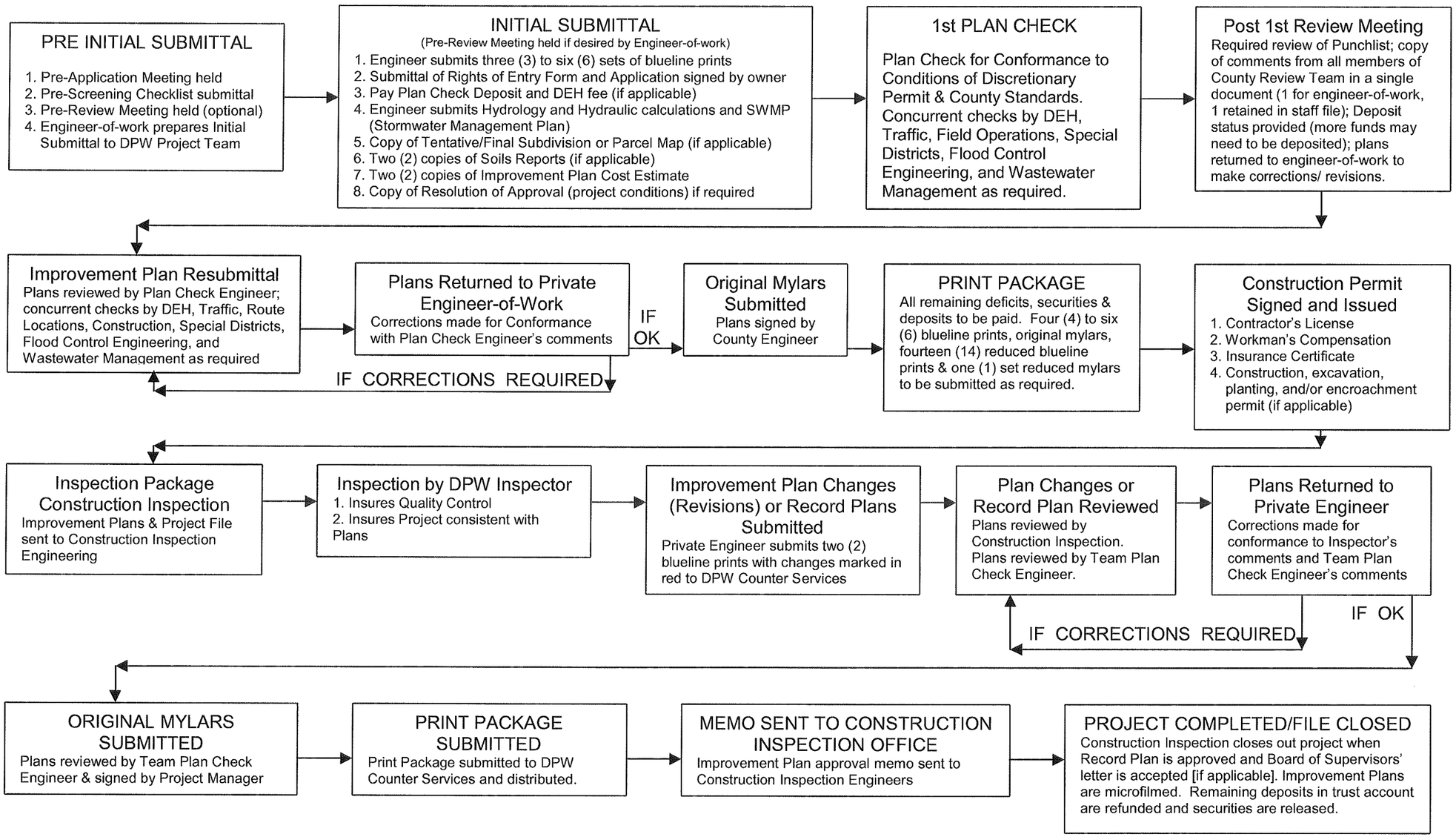
[Updated April 2011]

STREET IMPROVEMENTS

CHAPTER 1
STREET IMPROVEMENTS

5.100 PLAN PREPARATION
5.101 STREET IMPROVEMENT FLOWCHART

STREET IMPROVEMENT PLAN PROCESS FLOWCHART



STREET IMPROVEMENT PLAN PROCESS FLOWCHART

5.102 GENERAL REQUIREMENTS

1. These requirements shall apply to all Public Works development projects within the County of San Diego, which are subject to review by the County Engineer.

2. All drawings shall be on standard size sheets (24" x 36") with standard County title blocks. All lettering shall be 1/8" or larger with hand lettering, 1/10" or larger for machine lettering. The California Coordinate Index shall be included for each plan.

3. All title sheets shall include a key map clearly indicating the sheet numbers issued. All key maps shall be drawn showing overall layout of the water, sewer, storm drain, stormwater BMPs, fire hydrants, street signing and street lighting systems. The engineer of work should utilize County standard sheets, general notes, and landscape/erosion control plans to expedite the plan check process.

4. Each sheet is to be signed and sealed by a Registered Civil Engineer. All calculations submitted to support the improvement design (structural, electrical or mechanical) must be signed and sealed by a Registered Civil, Electrical or Mechanical Engineer.

5. Revisions made after original approval by the County Engineer shall be initiated by the engineer of work and submitted to the County Engineer for approval. The County Engineer or designee, prior to construction of the revised improvement, must sign off plan revisions.

6. All improvements are to be designed and constructed in accordance with the San Diego Regional Standard Drawings, San Diego County Design Standards, San Diego County Public and Private Road Standards, Standard Specifications Public Works Construction, California Department of Transportation Traffic and Highway Design Manuals, AASHTO Design Policies, San Diego County Hydrology and Drainage Design Manual, Standard Urban Stormwater Mitigation Plan (SUSMP) and these general requirements. (see "Street Improvement Plan Check List" in Section 5.201)

7. Profiles shall be shown on the top half of each sheet. Vertical curves shall show curve length and P.I. elevation, in addition to normal stationing and elevations.

8. Normally, the scale for improvement plans shall be 1" = 40' for the horizontal and 1" = 4' for the vertical. The vertical scale should be changed to 1" = 8' or other appropriate scale where grades are steep. For complex plans, the scale shall be 1" = 20' or larger for clarity.

9. Improvement plans shall be prepared in ink on mylar drafting film or reproduced by photo mylar (sepia, ammonia mylar or vellum are not accepted) unless otherwise approved by the County Engineer.

10. Hydrology and hydraulic/drainage calculations with maps and a Stormwater Management Plan (SWMP) with calculations and diagrams shall accompany all plans submitted for checking, unless the requirement is specifically required.

11. The following items must accompany the first plan check:

- Two copies of the soils report (if required).
- Improvement plan cost estimate.
- Approved conditions (Resolution of Approval, Final Notice of Approval or Notice of Decision).
- Copy of the approved tentative TM/TPM map (if applicable).
- The submittal checklist, a plan check deposit and a Health Department fee.

12. A striping/signage plan shall be required for all circulation element roads (and other public roads if required by the County Traffic Engineer).

13. All plans, calculations and reports are to be checked by the engineer of work for consistency, accuracy, clarity and conformity with the County of San Diego Standard Specifications, drawings and design criteria before submission for approval.

14. Subsequent plan checks shall include all previous checkprints.

15. Improvement plans shall show all existing trees within the street parkway and within the 5' outside of the right-of-way. Specifically designate all trees proposed to be removed.

16. All plans, specifications and supporting documents shall be signed and sealed by the engineer of work prior to the County Engineer's approval.

17. The original mylar drawings shall become the property of the County of San Diego upon approval and execution by the County Engineer.

18. The original mylar drawings shall be revised to reflect a construction change or as-built conditions by the engineer of work prior to final acceptance of the work by the County Engineer.

5.103 TITLE SHEET

A typical Title Sheet of a set of improvement plans includes the following:

- ❑ General Notes
- ❑ Contractor's Notes
- ❑ Engineer's Notes
- ❑ Key Map
- ❑ Key Map Legend
- ❑ Vicinity Map
- ❑ Plan Sheet Index
- ❑ Work to be done
- ❑ Legend
- ❑ Owner's Certificate
- ❑ Owner/Developer's Name/Address/Telephone Number
- ❑ Legal Description
- ❑ Assessor's Parcel Number
- ❑ Related Permit Numbers (Permits Title Block)
- ❑ Bench Mark Information (Bench Mark Title Block)
- ❑ Declaration of Responsible Charge
- ❑ Engineer of Design
- ❑ Engineer of Work
- ❑ Title Agency Title Block
- ❑ Engineer's Name/Address Title Block
- ❑ County of San Diego Title Block
- ❑ County Approved Changes Title Block
- ❑ Typical Street Sections
- ❑ Typical Details
- ❑ Specific Conditions Notes
- ❑ Sewer Agency title Block
- ❑ Sewer Agency
- ❑ Water Agency Title Block
- ❑ Water District's Notes
- ❑ Special Notes
- ❑ Declaration of Responsible Charge
- ❑ BMP Table

5.104 IMPROVEMENT SHEETS

A typical improvement plan sheet includes the following:

a) Plan View

- ❑ Engineer's Title Block, Seal and Signature
- ❑ Bench Mark Information
- ❑ All Existing Improvements (i.e. power poles/utilities/trees, etc.)
- ❑ Centerline Information (bearing, radius, length) Stationing
- ❑ Beginning of Curves, B.C End of Curves, etc.
- ❑ Curb, Gutter, Date (if applicable) Edge of Pavement
- ❑ Public Drainage Easements
- ❑ Width of the Road (centerline to right-of-way and centerline to curb line), Width of Sidewalk
- ❑ Sight Distance (as required by the Condition of Approval or County Engineer), Clear Space Easement – (per DS-20A & DS-20B)
- ❑ Street Lights
- ❑ Street Name Signs
- ❑ Sewer Line Information, radius, delta or bearing, length manholes, cleanouts, pipe classification, sewer laterals to each lot(s)
- ❑ Water Line Information, Pipe Classification, Water Lateral to each Lot(s)
- ❑ Fire Hydrant Location/Assembly
- ❑ Lot Numbers (if applicable)
- ❑ Curb Return Information and Stations
- ❑ Stormwater treatment control (Post-construction) BMPs
- ❑ Floodplain and floodway, both FEMA and County

b) Profile

- ❑ Existing Grade at Centerline
- ❑ Centerline Profile (grade – vertical curves-stationing)
- ❑ Proposed Finish Grade at Centerline
- ❑ Top of Curb Profile or Equation
- ❑ Waterline Profile (minimum clearance from top of waterline to proposed finish grade)
- ❑ Waterline Classification
- ❑ Waterline Blowoff (if possible)
- ❑ Sewer Line Profile and Grade (slope)
- ❑ Sewer Manholes/Cleanouts and Stationing
- ❑ Sewer Line Invert Elevations
- ❑ Sewer Line Classification
- ❑ Storm Drain Profile (cleanouts/catch basins/curb inlets)
- ❑ Hydraulic Grade Line/Energy Grade Line

- ❑ Storm Drain Pipe Classification/Velocity/Flow (cfs) – Pipe line grade, slope, length
- ❑ BMP type, slope, length, cross-section details
- ❑ Curb Return Profile
- ❑ Cul-de-sac Profile
- ❑ Details

5.105 SAMPLE LETTERS REQUIRED

1. Utility Arrangements

County of San Diego
Department of Public Works
5201 Ruffin Road Suite D, MS O336
San Diego, CA 92123

TENTATIVE MAP NUMBER _____ OR TENTATIVE PARCEL MAP NUMBER _____

(Project Manager):

Pursuant to Section 81.403 (a)(6) of the San Diego County Code and TM/TPM Resolution of Approval/Final Notice of Approval No. _____, I have made arrangements with the utility companies to install all new utility facilities underground.

(Also use one of the following 4 paragraphs which applies to your project.)

1. There are no existing overhead utilities facilities within this subdivision.

2. I have also made arrangements with the utility companies to relocate existing facilities to an underground position before final acceptance of the subdivision by the County and release of subdivision bonds.

3. The undergrounding of the following existing facilities has been waived by the (Planning Commission) or (Board of Supervisors), at the (date) Hearing. (Provide a description and location of each facility.)

4. The Planning Commission waived the requirement to install cable television lines on (date). (Attach copy of the Planning Commission action.)

I have contacted (Name and phone number) of San Diego Gas and Electric Company, (Name and phone number) of Pacific Telephone Company, and (when applicable) (Name and phone number) of the appropriate television cable company.

Very truly yours,

(Subdivider)

(Title)

(Date)

2. Sample Sight Distance Letter – Public to Public & Private to Public

(Director Name), Director
County of San Diego
Department of Public Works, MS O336
5201 Ruffin Road Suite D
San Diego, CA 92123

SIGHT DISTANCE LETTER (Project Number)

Dear (Director Name):

I, (Engineer Name), R.C.E. (Number) state that physically, there will be a minimum adequate unobstructed sight distance in both directions from future (road name) along (road name), per Design Standards of Section 6.1 Table 5 of the County of San Diego Public Road Standards approved (date of current edition).

Sincerely yours,

Engineer's Name
R.C.E. Number SEAL
Expiration Date

3. Sample Sight Distance Letter – Driveway to Public

(Director Name), Director
County of San Diego
Department of Public Works, MS O336
5201 Ruffin Road Suite D
San Diego, CA 92123

LAND DEVELOPMENT SIGHT DISTANCE POLICY (Project Number)

Dear (Director Name):

This letter is to certify that the sight distance of adjacent driveways and street openings within _____ feet beyond all improvements on (road name) will not be adversely affected by this project.

Sincerely yours,

Engineer's Name
R.C.E. Number SEAL
Expiration Date

4. Sample Sight Distance Letter – Private to Private

(Director Name), Director
County of San Diego
Department of Public Works, MS O336
5201 Ruffin Road Suite D
San Diego, CA 92123

SIGHT DISTANCE LETTER (Project Number)

Dear (Director Name):

I, (Engineer Name), R.C.E. (Number) state that physically, there will be a minimum adequate unobstructed sight distance in both directions from future (road name) along (road name) per San Diego County Private Road Standards Section 3.2.G.

Sincerely yours,

Engineer's Name
R.C.E. Number SEAL
Expiration Date

5.106 SAMPLE ESTIMATE

IMPROVEMENT ESTIMATE FOR (project number_____)

ESTIMATE PREPARED BY: _____

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
STREET ITEMS				
Subgrade Prep.	62,619	SF	$0.40	$25,048
Paving 2" AC OVER 6" BASE	62,619	SF	$0.80	$50,095
A. C. Dike	4,175	SF	$7.80	$32,565
Street Signs	3.00	EA	$180.00	$540
		Subtotal Streets:		
	$108,200			
DRAINAGE ITEMS				
Curb Inlet	1	EA	$3,500.00	$3,500
RockSlopeProtection	1	CY	$150.00	$150
		Subtotal Drainage:		$3,700
SEWER ITEMS				
PVC Sewer Main (8")	2,386	LF	$35.00	$83,510
V.C.P. Sewer Laterals (4")	21	EA	$1,250.00	$26,250
Manholes	9	EA	$2,050.00	$18,450
Sewer Drop Manhole	2	EA	$3,000.00	$6,000
Cleanouts	1	EA	$880.00	$880
		Subtotal Sewer:		
	$135,100			
WATER ITEMS				
6" Water Line	572	LF	$29.00	$16,588
8"WaterLine	145	LF	$30.00	$4,350
6" Gate Valve	3	EA	$650.00	$1,950
8" Gate Valve	1	EA	$830.00	$830
Fire Hydrant	2	EA	$2,730.00	$5,460
1"AirRelease Valve	1	EA	$1,200.00	$1,200
1" Service Lateral	21	EA	$600.00	$12,600
		Subtotal Water:		$43,000

A. Improvement Items:	
1. Subtotal Streets	$108,200
2. Subtotal Drainage	$3,700
3. Subtotal Sewer	$135,100
4. Subtotal Water	$43,000
5. Subtotal Estimate	$290,000
Plus 10% Contingency	$29,000
6. Total Estimate	$319,000

The latest Unit Price List can be obtained at the Grading & Improvement Counter

5.200 PLAN CHECKING

5.201 STREET IMPROVEMENT PLAN CHECK LIST

P.R.S. = Public Road Standards
Pv.R.S. = Private Road Standards
R.S.D. = Regional Standard Drawings
C.T.M. = Caltrans Traffic Manual
C.S.P. = Caltrans Standard Plans
C.H.D.M. = Caltrans Highway Design Manual
T.G. = Traffic Guidelines (County of San Diego)
S.A. = Sewer Agency
W.A. = Water Agency
M.P.M. = Map Processing Manual, County of San Diego
PCM = Plan Check Manual, County of San Diego
Appendix = Chapter 4, Plan Check Manual, County of San Diego
S.E.P. = Standard Engineering Practice
SUSMP = Standard Urban Stormwater Mitigation Plan
CSWQH = California Storm Water Quality Handbook: Project Planning and Design Guide and California Stormwater Quality Association Stormwater Best Management Practice Handbook

Item	SOURCE
Access (Circulation Element Road)	P.R.S.
Alleys, design, paving	R.S.D. & P.R.S.
Assessor's Parcel Numbers	——
Barricades at street ends	R.S.D.
Basis of Bearing	——
Bench Mark	——
Best Management Practices [BMPs]	CSWQH & SUSMP
Boundary road (half-width road)	P.R.S.
Centerline equation (if applicable)	S.E.P.
Centerline separation	P.R.S.
Centerline (reference to County approved plans, road survey, subdivision map, etc.)	S.E.P.
Centerline radius	P.R.S.
Chevrons (where curb and sidewalk are not contiguous and slope greater than 7%)	P.R.S.
Circulation Element Roads, Frontage Road	P.R.S.
Construction notes	S.E.P.

Cost estimate (Engineer's cost estimate)	Appendix
Cross gutter	R.S.D. & P.R.S.
Cross gutter (mid-block)	R.S.D.
Cross section (Typical road cross sections)	P.R.S.
Cross-slope	P.R.S.
Cross-fall	P.R.S.
Crown	P.R.S.
Cul-de-sac design, commercial	R.S.D. & P.R.S.
Cul-de-sac design, residential	R.S.D. & P.R.S.
Cul-de-sac design, turn around grade	P.R.S.
Cul-de-sac (temporary at dead ends)	R.S.D.
Cul-de-sac (profile)	S.E.P.
Culverts, driveways	P.R.S.
Curb returns, radius	P.R.S.
Curb return arcs and station and profile	S.E.P.
Curb return data table	S.E.P.
Curbs	R.S.D. & P.R.S.
Curbs and gutters-combined	R.S.D.
Curb (monolithic), gutter and sidewalk	R.S.D.
Curb and gutter-rolled	R.S.D.
Curve radius (horizontal), minimum	P.R.S.
Cutoff wall at end of pavement	R.S.D.
Cutoff wall at end of alley pavement	R.S.D.
Declaration of responsible charge	Appendix
Delineation (on striping plan)	Latest C.T.M.
Detour plans	Latest C.T.M.
Dikes (AC dikes)	R.S.D. & P.R.S.
Dip sections	P.R.S.
Documents (sources)	P.R.S.
Drainage system	PCM
Driveways locations (conformation & placement)	R.S.D. P.R.S.
Easements	M.P.M.
Encroachment permits	County/other agencies

Encroachment (slopes, etc.) On adjacent property	S.E.P.
Engineer's name, signature, stamp and information	——
Existing power poles within public R/W	
Existing road plans (match with proposed)	S.E.P.
Existing structures (affecting improvements)	S.E.P.
Fire hydrants	R.S.D.
Fire hydrant markers	R.S.D.
Future road extensions, alignment	P.R.S.
Floodplain and floodway	FEMA & County.
General notes	Appendix
Grades, existing and proposed (plan & profile)	P.R.S.
Grading plan (compare with street improvement plan)	S.E.P.
Guardrail	Latest C.T.M. & C.S.P.
Half-width roads	P.R.S.
Hillside residential street	P.R.S.
Illumination	P.R.S.
Improvements (Required road improvements) (curbs, dikes, sidewalks, driveways, road name sign, traffic signals, signs)	P.R.S.
Improvement plans	P.R.S.
Interim roads	P.R.S.
Intersection design, improvements, sight distance, centerline separation , angle	P.R.S.
Key map (suggested scale 1"=200')	S.E.P.
Knuckles at sharp radius, loops	R.S.D.
Lane width (striping plan)	P.R.S.
Lateral tables (sewer, water)	S.E.P.
Left turn lanes	Latest C.T.M. & P.R.S.
Left turn pockets & local widening	Latest C.T.M.
Legal description	S.E.P.
Lighting (street)	P.R.S.

Loop roads	P.R.S.
Lot number (if applicable)	S.E.P.
Low Impact Development (LID)	SUSMP
Median-Curb and gutter	R.S.D.
Medians (striping plan)	Latest C.T.M. & P.R.S.
Median openings	T.G. & P.R.S.
Minimum standards (table -2-)	P.R.S.
Non-Circulation element roads -17-	P.R.S.
North arrow on all sheets	S.E.P.
Obstacles (removal)	S.E.P.
Off-site improvements	P.R.S.
Owner/Permittee signature	S.E.P.
Parkways, recreational	P.R.S.
Pavement thickness/structural section	P.R.S.
Pedestrian ramp	R.S.D.
Plan changes	P.R.S.
Power poles	
Profile (existing and proposed E.P., centerline, curb, etc.)	S.E.P.
Public road improvements	P.R.S.
Radius, (minimum curve radius)	P.R.S.
Record plan (As-Built)	P.R.S.
Recreational parkway	P.R.S.
Relocation of existing facilities	P.R.S.
Removal of (curb, gutter, sidewalk, pavement)	P.R.S.
Removal of existing facilities	P.R.S.
Retaining wall(s)	S.E.P.
Right-of-way (based on condition of approval)	S.E.P.
Road alignments	P.R.S.
Road Classifications	P.R.S.
Scale (plan and profile)	S.E.P.
Select system roads (extra 1.5' fill on shoulders)	S.E.P.
Sewer data table	S.E.P.

Sewer (plan, profile, general notes)	Check with sewer agency
Sheet sizes	
Sidewalks	P.R.S.
Sidewalk (typical sections)	R.S.D.
Sidewalk joint locations	R.S.D.
Sidewalk (transition to natural ground)	P.R.S. & R.S.D.
Sight distance (intersectional)	P.R.S. & R.S.D.; DS-20A & DS-20B
Sight distance (plan, profile, clear space easement)	R.S.D. DS-20A & DS-20B
Signals (traffic)	Latest C.T.M. & P.R.S.
Signs	Latest C.T.M. & P.R.S.
Signs (road name)	P.R.S.
Split level road	P.R.S.
Stationing (plan and profile)	P.C.M
Stop signs	T.G.
Street lights	P.R.S.
Street names (approved)	S.E.P.
Street name signs	P.R.S.
Street with grades 1% or less (Concrete curb and gutter required from intersection to intersection)	S.E.P.
Streets with grades greater than 10% (Concrete curb and gutter required from intersection to intersection)	S.E.P.
Street typical section	
Striping plan & signage plan	Latest C.T.M.
Striping (centerline)	T.G.
Striping (edge)	T.G.
Structural section	P.R.S.
Tangent length between curves	P.R.S.
Tapers (variation in pavement width)	Latest C.T.M.
Tapers transitions	Latest C.T.M.
Traffic index	P.R.S.
Traffic signal plans	Latest C.T.M.

Traffic signal relocation plans	Latest C.T.M.
Underground typical location (conversion/replacement/upgrade)	M-21
Utility locations (sewer, water, storm drain)	R.S.D. & Flood Control M-22, M-23
Utility placement	P.R.S.
Vertical sight distance, vertical curves	Latest C.H.D.M.
Vicinity Map	S.E.P.
Water notes	Check with water agency
Widening existing roads (on-site, off-site, taper transitions)	Latest C.H.D.M.
Width of traveled way	P.R.S.
Work to be done	S.E.P.

DRAINAGE

CHAPTER 2
DRAINAGE

6.100 DESIGN AND PLAN PREPARATION

6.101 GENERAL REQUIREMENTS

1. All drainage design and requirements shall be in accordance with the latest San Diego County Hydrology and Drainage Design Manual (DDM).

2. All stormwater management design and requirements shall be in accordance with the latest County of San Diego Watershed Protection, Stormwater Management and Discharge Control Ordinance and Standard Urban Stormwater Mitigation Plan (SUSMP) and the requirements of the County Engineer and based on full development of upstream tributary basins. All manufactured BMPs shall be constructed per manufacturer's specifications.

3. The use of underground storm drain systems, in addition to standard curb and gutter shall be required:

    a) When flooding or street overflow during 100-year six-hour storm cannot be maintained between right of way lines.

    b) When 100-year six-hour storm flow from future upstream development will cause damage to structures and improvements.

    c) When existing adequate drainage facilities are available for use (adjacent to proposed development).

    d) When more than one travel lane of arterial and collector streets would be obstructed by 10-year six-hour storm water flow. Special consideration will be required for super-elevated streets.

4. The use of underground storm drain systems may be required:

    a) When the water level in streets at the design storm is within 1" of top of curb.

    b) When velocity of water in streets exceeds 11 FPS.

    c) When the water travels more than 1,000' over land.

5. Permanent drainage facilities and right of way, including access, shall be provided from development to point of satisfactory disposal.

6. Storm Drains constructed at a depth of 15' or greater measured from finish grade to the top of pipe or structure shall be considered deep storm drains and should be avoided if at all possible. When required, special design consideration will be required to the satisfaction of the County Engineer. Factors considered in the design will include:

   a) Oversized specially designed access holes/air shafts

   b) Line encasements

   c) Oversized lines

   d) Increased easement requirements for maintenance access

   e) Water-tight joints

   f) Additional thickness of storm drain.

   The project designer should meet with the plan checker prior to initiation of design to review design parameters.

7. Concentrated drainage from lots or areas greater than 0.5 acres shall not be discharged to County streets unless specifically approved by the County Engineer.

8. Diversion of drainage from natural or existing basins is discouraged and requires approval of the County Engineer.

6.102 HYDROLOGY

1. Off-site, use a blue-line print of the latest County 200-scale topographic mapping. Show existing culverts, cross-gutters and drainage courses based on field review. Indicate the direction of flow; clearly delineate each drainage basin showing the area and discharge and the point of concentration.

2. On-site, use the grading plan. If grading is not proposed, then use a 100-scale plan or greater enlargement. Show all proposed and existing drainage facilities and drainage courses. Indicate the direction of flow. Clearly delineate each drainage basin showing the area and discharge and the point of concentration.

3. Use the latest edition of the San Diego County Hydrology and Drainage Design Manual for finding the "Tc" (time of concentration) and "I" (intensity).

4. Use the existing or ultimate development, whichever gives the highest "C" [coefficient, C (soil group)] factor.

5. Use the rational formula Q [flow (cfs)]=C I A (area/acreage) for watersheds less than one (1) square mile unless an alternate method is approved by the County Engineer. For watersheds in excess of one (1) square mile, the method of analysis shall be approved by the County Engineer prior to submitting calculations.

6.103 HYDRAULICS

1. Street — provide:

   a) Depth of gutter flow calculation.

   b) Inlet calculations.

   c) Show gutter flow Q, inlet Q, and bypass Q on a plan of the street.

2. Storm drain pipes and open channels — provide:

   a) Hydraulic loss calculations for: entrance, friction, access holes, junctions, bends, angles, reduction and enlargement.

   b) Analyze existing conditions upstream and downstream from proposed system.

   c) Calculate critical depth and normal depth for open channel flow conditions.

   d) Design for non-silting velocity of appropriate FPS in a two-year frequency storm per the DDM, unless otherwise approved by the County Engineer.

   e) All pipes and outlets shall show HGL (hydraulic grade line), velocity and Q value(s) for which the storm drain is designed to discharge.

f) Confluence angles shall be maintained from the main upstream flow per the DDM. Flows shall not oppose main line flows.

6.104 INLETS

1. Curb inlets at a sump condition should be designated for appropriate CFS (cubic feet per second) per lineal foot of opening per the DDM when headwater may rise to the top of curb.

2. Curb inlets on a continuous grade should be designed based on criteria from the DDM.

3. Grated inlets should be avoided when possible. When necessary, the design should be based on the Bureau of Public Roads Nomographs (now known as the Federal Highway Administration). All grated inlets shall be bicycle proof.

4. All catch basins shall have an access hole in the top unless access through the grate section is satisfactory to the County Engineer.

5. Catch basins/curb inlets shall be located so as to eliminate, whenever possible, cross gutters. Catch basins/curb inlets shall not be located close to any curb return or driveway per the DDM.

6. Minimum connector pipes for public drainage systems shall be per criteria from the DDM.

7. Flow through inlets may be used when pipe size is equal to or less than criteria from the DDM and open channel flow characteristics exist.

6.105 STORM DRAINS

1. Minimum pipe slopes shall be per criteria from the DDM unless otherwise approved by the County Engineer.

2. Minimum storm drain, within public right of way, size shall be diameter specified in the DDM.

3. Provide cleanouts at specified maximum spacing and at angle points and at breaks in grade greater than minimum specified per criteria from the DDM.

4. The material for storm drains shall be those as specified in criteria from the DDM designed in conformance with San Diego County Flood Control design criteria. Corrugated steel pipes shall not be used.

5. Plastic/rubber collars shall be prohibited.

6. Horizontal and vertical curve design shall conform to manufacturer recommended specifications.

7. The pipe invert elevations, slope, and pipe profile line shall be delineated on the Mylar of the improvement plans.

8. The strength classification of any pipe shall be shown on the plans. Minimum D-load for RCP shall be per DDM in all County streets or future rights of way. ACP shall have the appropriate times the minimum D-load required for RCP. Minimum D-load for depths less than 2', if allowed, shall be per criteria from the DDM.

9. For all drainage designs not covered in these standards, the San Diego County Hydrology and Drainage Design Manual shall be used.

10. For storm drain discharging into unprotected or natural channel, proper energy dissipation measures shall be installed to prevent damage or erosion.

11. The use of detention basins to even out storm peaks and reduce piping is permitted with substantiating engineering calculations and proper maintenance agreements.

12. Desiltation measures for silt caused by development shall be provided and cleaned regularly during the rainy season (October 1ST to April 30TH) and after major rainfall as required by the County Engineer or his designated representative. Adequate storage capacity as determined by the County Engineer shall be maintained at all times.

13. Protection of downstream or adjacent properties from incremental flows (caused by change from an underdeveloped to a developed site) shall be provided. Such flows shall not be concentrated and directed across unprotected adjacent properties unless an easement and storm drains or channels to contain flows are provided.

14. Unprotected downstream channels shall have erosion and grade control structures installed to prevent degradation, erosion, alternation or down cutting of the channel banks.

15. Storm drain pipes designed for flow meeting or exceeding 20 feet per second will require additional cover over invert reinforcing steel as approved by the County Engineer.

16. Storm drain pipe under pressure flow for the design storm, i.e., HGL above the soffit of the pipe, shall meet the requirements of ASTM C76, C361, C443 for water-tight joints in the sections of pipe calculated to be under pressure.

17. An all weather access road from a paved public right of way shall be constructed to all drainage and utility improvements. The following design parameters are required: Maximum grade 14%, 15 MPH speed, gated entry, minimum paved width 12', 38' minimum radius, paving shall be a minimum of 4" AC over 4" Class II AB, turnaround required if over 300'. Work areas should be provided as approved by the plan checker. Access roads should be shown on tentative project approval to ensure adequate environmental review.

18. Engineers are encouraged to gravity drain all lots to the street without use of a yard drain system. Where this is not possible yard drains should exit through the curb face in conformance with SDRSD D-27.

6.106 SAMPLE ESTIMATE

DRAINAGE ITEM	QUANTITY	UNIT	UNIT PRICE	COST
Drainage Pipes 18" R.C.P.CL-200D	6	LF	$80.00	$480
Drainage Pipes 24" R.C.P.CL-1350	18	LF	$90.00	$1,620
Const. 9'X5'RCB(SDRSD D-76,Class A)	1014	LF	$450.00	$456,300
Const.RCB Wingwall (SDRSD D-79,Type A)	2	EA	$5,700.00	$11,400
Const. Manhole (Salvage Exist.Frame&Cover)	2	EA	$600.00	$1,200
Const. Manhole (New Frame&Cover)	1	EA	$2,200.00	$2,200
Extend Exist.Rock Slope Protection	34	CY	$150.00	$5,100
Connect New 24" RCP to Exist. A-8 SDCO	1	EA	$600.00	$600
Connect to Exist.18" W/Pipe Collar	1	EA	$550.00	$550
Connect Exist. 24" RCP to NEW RCB	3	EA	$600.00	$1,800
Connect. Exist. 18" RCP to New RCB	2	EA	$500.00	$1,000
Concrete Encase Exist. 8" PVC Sewer	30	LF	$18.00	$540
Concrete Encase 6" Fire Service	40	LF	$18.00	$720
Extend Ex. Rip Rap	34	CY	150	$5,100
		Subtotal Drainage:		**$488,610**

The latest Unit Price List can be obtained at the Grading & Improvement Counter

6.200 DRAINAGE CHECKING

6.201 DRAINAGE CHECK LIST

D.D.M. = San Diego County Hydrology and Drainage Design Manual
R.S.D. = Regional Standard Drawings
S.E.P. = Standard Engineering Practice
SUSMP = Standard Urban Stormwater Mitigation Plan
CSWQH = California Storm Water Quality Handbook: Project Planning and Design Guide and California Stormwater Quality Association Stormwater Best Management Practice Handbook

Item	SOURCE
Asphalt concrete spillway	R.S.D.
Best Management Practices [BMPs]	CSWQH &SUSMP
Box culvert (single), detail	R.S.D.
Box culvert (double), detail	R.S.D.
Box culvert (triple), detail	R.S.D.
Box culvert wingwall types A, B and C, detail No. 1	R.S.D.
Box culvert wingwall types A and B	R.S.D.
Box culvert warped wingwalls, detail No. 1	R.S.D.
Box culvert warped wingwalls, detail No. 2	R.S.D.
Box culvert, miscellaneous detail No. 1	R.S.D.
Box culvert, miscellaneous detail No. 2	R.S.D.
Catch basin – type 1	R.S.D.
Catch basin – type F	R.S.D.
Catch basin – type G	R.S.D.
Cleanouts notes/details	R.S.D.
Cleanout - type A	R.S.D.
Cleanout - type B	R.S.D.
Cleanouts spacing	
Concrete apron for curb inlet	R.S.D.
Concrete energy dissipator (18" to 30" diameter pipe)	R.S.D.
Concrete energy dissipator (reinforcement) (36" to 72" diameter pipe)	R.S.D.
Concrete lug	

Confluence angles	
Critical depth calculation	
Curb inlet-type B	R.S.D.
Curb inlet-type C	R.S.D.
Curb inlet-type D	R.S.D.
Curb inlet-type J median	R.S.D.
Curb inlet opening	R.S.D.
Curb outlet-type A	R.S.D.
Curtain wall	R.S.D.
Cutoff wall for drainage channel	R.S.D.
Debris fence	R.S.D.
D-load for pipes	
Depth of water calculation	
Depth of gutter flow calculation	
Detention basins	
Discharge downstream	
Direction of street drainage shown	
Diversion of existing drainage	
Drainage channel (major)	
Drainage discharge onto other properties (signed agreement)	
Drainage ditches	R.S.D.
Drainage easements (on-site)	
Drainage easements (off-site)	
Drainage structure grate	R.S.D.
Easements (on-site)	
Easements (off-site)	
Easements (recording documentation)	
Energy grade line	
Entrance taper and downdrain pipe	R.S.D.
Existing conditions (upstream, downstream)	
Grate frame (welded steel)	R.S.D.
Graded earth channel	R.S.D.
Headwall type L-circular pipe	R.S.D.
Headwall type L - CSP arch	R.S.D.

Hydrology calculations (off-site and on-site)	D.D.M.
Hydraulic calculations	D.D.M.
Hydraulic grade line (HGL)	
Hydraulic loss calculations (entrance, friction, junction, access holes, bends, angles, reduction and enlargement)	
Inlet calculations	
Inlet notes/details	R.S.D.
Inlets (type A and B) corrugated steel pipe inlet	R.S.D.
Inlets (corrugated steel pipe inlets)	R.S.D.
Inlet apron for culverts up to 42" diameter	R.S.D.
Low Impact Development	SUSMP
Map of drainage areas	
Major drainage channel	
Minor drainage channel	
Normal depth calculation	
Pipe collar	R.S.D.
Pipe culvert headwalls, endwalls and warped wingwalls	R.S.D.
Pipe invert elevations	
Pipe profile and slopes	
Pipe bedding and trench backfill for storm drains	R.S.D.
Pipe elevation and grades	
Pipe length	
Pipe to channel connection	R.S.D.
Pipe sizes	
Protection of downstream or adjacent properties	
Rational method formula Q=CIA	
Rip Rap energy dissipator	R.S.D.
Rounded pipe ends in drainage structures	R.S.D.
Sidewalk underdrain pipe	R.S.D.
Slotted corrugated steel pipe drains	R.S.D.

(12" through 24")	
Straight Headwall-type A (circular pipe)	R.S.D.
Straight Headwall-type A (CSP-ARCH)	R.S.D.
Straight Headwall-type B (circular pipe)	R.S.D.
Straight Headwall-type B (CSP-ARCH)	R.S.D.
Tapered inlet and downdrain flume	R.S.D.
Velocity of water in streets exceeding 11 FPS	
Water traveling more than 1000' over land	
Wing and U type headwalls for 12" to 36" pipe	R.S.D.
Wing and U type headwalls for 42" to 84" pipe	R.S.D.

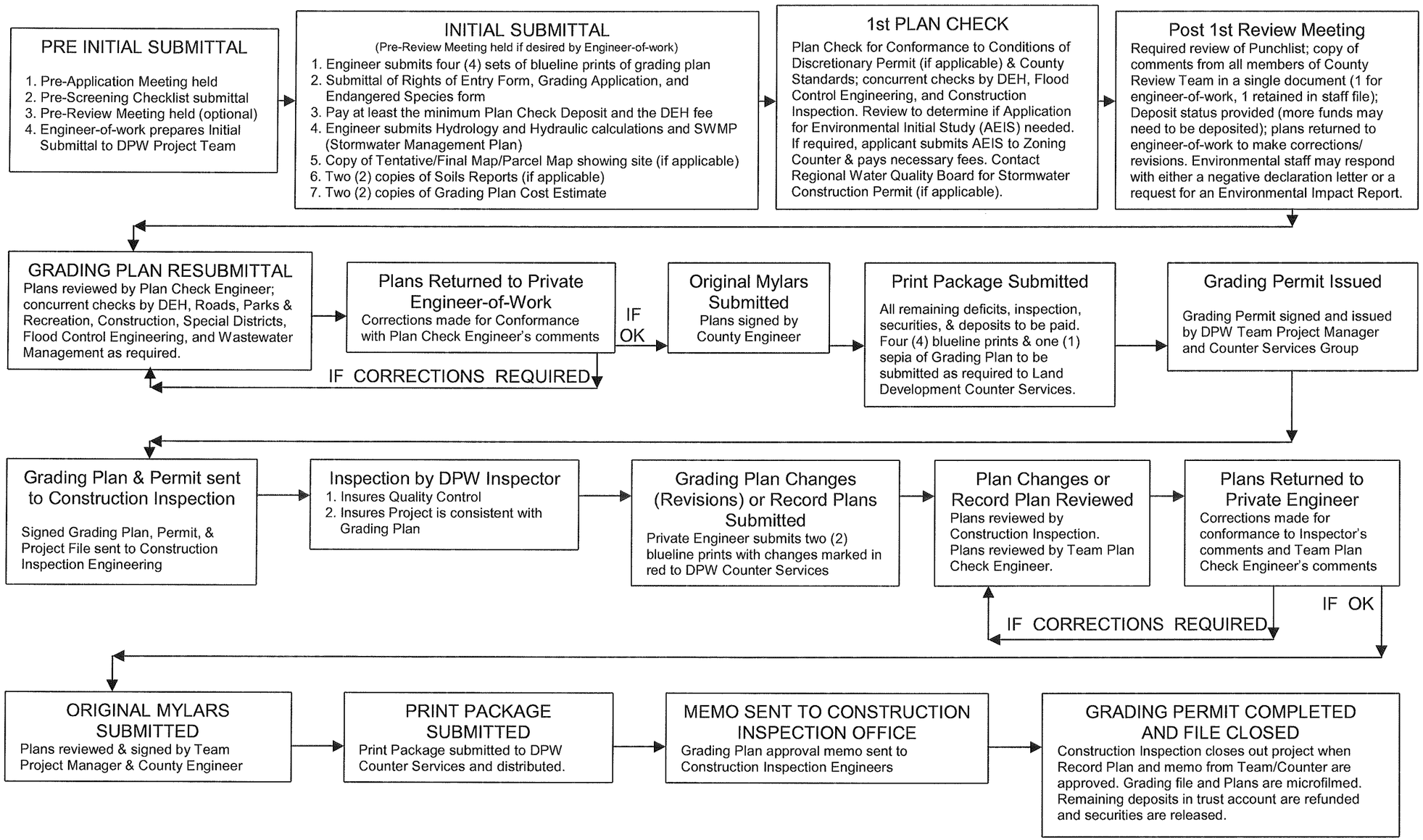
NOTE: For all drainage designs and check list not covered in these standards, use the current San Diego County Hydrology and Drainage Design Manual.

GRADING PLANS

CHAPTER 3
GRADING PLANS

7.100 PLAN PREPARATION
7.101 GRADING PERMIT PLAN PROCESS FLOWCHART

GRADING PLAN PROCESS FLOWCHART



GRADING PLAN PROCESS FLOWCHART

7.102 GENERAL REQUIREMENTS

The requirements for grading plans and permits shall be in conformance with the San Diego County Grading Ordinance.

1. When a grading permit is required, a grading plan must be prepared by a registered civil engineer. A preliminary sketch may be submitted to obtain the County Engineer's acceptance of the proposed grading design after which the grading plan will be prepared.

2. All drawings shall be standard size sheets (24"x 36", 8 ½"x 11" or 8½"x 14") with standard County title block. All lettering shall be 1/8" or larger with hand lettering, 1/10" or larger for machine lettering. California Coordinates shall be verified and included for each plan.

3. All title sheets shall have an index or key map clearly indicating the sheet numbers issued. All index maps shall be drawn showing overall layout of the water, sewer (including future extensions). The Engineer of Work should utilize County Standard Sheets, General notes, and Erosion Control Plans to expedite the plan check process.

4. Each sheet is to be signed and sealed by a Registered Civil Engineer. The Registered Engineer doing the design shall also sign complex structural designs such as retaining walls. When a soils report is required, the Soils Engineer and/or Geologist shall sign grading plans. In addition, all calculations, plans and reports shall be signed by and sealed by the engineer responsible for the design.

5. Revisions made after original approval by the County Engineer shall be initiated by the Engineer of Work and submitted to the County for approval. The County Engineer prior to construction of the revised improvements must sign off plan revisions.

6. Grading plans shall be prepared in ink Mylar drafting film or reproduced by photo Mylar (sepia, ammonia or vellum are unacceptable) unless otherwise approved by the County Engineer.

7. All public and private road/utility, stormwater, applicable Treatment Control BMP, and drainage easements shall be shown on the grading plan.

8. Drainage calculations, maps, and a Stormwater Management Plans (SWMP) shall accompany all grading plans submitted for checking, unless requirement is specifically waived. Treatment Control BMP details and sections shall be shown on plans.

9. Plans submitted shall be accompanied by a letter of transmittal, Engineer's Estimate of quantities and costs.

10. All applicable plan check deposits/fees and inspection deposits/fees shall be paid with the first submittal package.

11. The original check prints shall accompany revised plans resubmitted for checking.

12. Original drawings shall become the property of the County upon being signed by the County Engineer.

13. The Engineer of Work shall revise the original drawing to reflect as-built conditions prior to final acceptance of the work by the County.

14. All plans, specifications, and supporting documents shall be signed and sealed by the Engineer in responsible charge of the work prior to County Engineer's approval.

15. Per the County Grading Ordinance, a landscape/irrigation plan is required for projects, which have slopes more than 15' in height or as required by the discretionary permit.

16. A letter of permission shall be required for any grading that encroaches into adjacent properties.

7.103 TITLE GRADING SHEET

The typical title sheet for a set of grading plans includes the following:

- ❑ Specific Conditions Notes
- ❑ General Notes
- ❑ Contractor's Note
- ❑ Engineer's Note
- ❑ Declaration Of Responsible Charge
- ❑ Engineer's Title Block/Signature
- ❑ Department Of Planning And Land Use Title Block
- ❑ Key Map
- ❑ Vicinity Map
- ❑ Work To Be Done

- ❑ Owner/Developer Name/Address
- ❑ Owner/Permittee's Name/Address/Telephone Number
- ❑ Site Address
- ❑ Assessor's Parcel Number
- ❑ Legal Description
- ❑ Solar Certificate
- ❑ Soils Engineer's Registration Number/Address
- ❑ Bench Mark
- ❑ County Of San Diego Title Block
- ❑ Water Agency Title Block
- ❑ Sewer Agency Title Block
- ❑ Details
- ❑ Typical Pad Grading (If Applicable)
- ❑ Earthwork Information
- ❑ Slope Ratios
- ❑ Name And Telephone Number Of All Utility Agencies
- ❑ Basis Of Bearings
- ❑ BMP Table

7.104 GRADING SHEETS

A typical grading sheet includes the following:

1. Subdivision boundary or property lines.

2. All existing and proposed road, utility, drainage, applicable Treatment Control BMP, and open space easements.

3. Proposed and existing contour lines and/or elevations.

4. Contours shall extend beyond limits of grading at least 100 feet or sufficient distance to show on-site and off-site drainage.

5. Spot elevations shall be shown to clarify any land surface not readily discernible from a study of contour lines.

6. Location and graphic representation of all existing natural and proposed man-made drainage facilities.

7. Detailed plans of all surface and subsurface drainage devices, walls, cribbing, stormwater BMPs, and other protective devices to be constructed with or as a part of the grading plan.

8. Location and graphic representation of proposed excavations and fills, of on-site storage of soil and other earth material, and of on-site disposal.

9. Location of existing trees and the location and type of vegetation to be left undisturbed.

10. Location of final surface runoff, erosion, sediment control measures, and Low Impact Development (LID) measures.

11. Quantity of the amounts of excavation, fill and cut, import or export (cubic yards).

12. Location of all proposed buildings or structures on property where the work is to be performed and the location of all buildings or structures on land of adjacent owners which are within 15 feet of the property or which may be affected by proposed grading operations.

13. 100-Year floodplain and floodway, both FEMA and County, from appropriate map(s), if applicable.

14. Appurtenant structures, retaining walls, drainage facilities or other grading appurtenances.

15. Grading details along the property line to insure no possible problems are created by the proposed development to the adjoining property owners.

16. Slope ratios of all slopes shall be in conformance with the latest edition of the San Diego County Grading Ordinance.

17. Retaining walls with top and bottom of wall elevations shall be called out on the plan. (All retaining walls require Building Inspection approval).

18. Proper set back from property lines per County Regional Standard Drawings DS-11.

19. Cut and fill ratios on the plans, if other than standard.

20. Location of cut and placement of fill ("Daylight" and limit lines)

21. Typical lot drainage, lot grading, grading of street section.

22. Typical berm, swale at top of fills slopes and brow ditch.

23. Percent of grade of streets and driveways, length of vertical curves, B.V.C and E.V.C.

24. All grading details in accordance with the San Diego County Standard Drawings DS-8, DS-10, DS-11, D75.

25. Signed Waiver and release (or letter of permission) for discharge of drainage onto adjacent property.

26. Caution notes for all existing telephone, gas and utility lines.

27. Lot numbers, lot slopes, lot dimensions and pad elevations.

28. Top and toe of slopes, grade breaks.

7.105 SAMPLE LETTERS REQUIRED

These are just samples of permission to grade letters. They can be put in a different format, but the information listed in them must be included.

1. Permission to Grade

County of San Diego
Department of Public Works
Grading and Improvements, Mail Station O336
5201 Ruffin Road Suite D
San Diego, CA 92123

Gentlemen:

PERMISSION TO GRADE IN CONJUNCTION WITH A LAND DEVELOPMENT PROJECT

(I/We) (am/are) the owner(s) of (lot no., block, subdivision name and Map no.), Assessor's Parcel Number (APN no.) which is adjacent to the (northerly/westerly/southerly/easterly) property line of the proposed project on (lot no., block, subdivision name and Map no.). (I/We) have reviewed the proposed grading on (my/our) property and do hereby grant permission to grade as shown on County of San Diego (grading/improvement) plan (plan no.).

By: _____

Date: _____

2. Permission to Grade and Construct

County of San Diego
Department of Public Works
Grading and Improvements, Mail Station O336
5201 Ruffin Road Suite D
San Diego, CA 92123

PERMISSION TO GRADE AND CONSTRUCT IN CONJUNCTION WITH A LAND DEVELOPMENT PROJECT

(I/We) (am/are) the owner(s) of (lot no., block, subdivision name and Map no.), Assessor's Parcel Number (APN no.) which is adjacent to the (northerly/westerly/southerly/easterly) property line of the proposed project on (lot no., block, subdivision name and Map no.). (I/We) have reviewed the proposed grading on (my/our) property and do hereby grant permission to grade and construct as shown on County of San Diego (grading/improvement) plan (plan no.).

By: _____

Date: _____

7.106 SAMPLE GRADING ESTIMATE

ESTIMATE FOR GRADING PLAN _____

Engineer: _____

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1. Earthwork				
a- Cut/Fill	55,000.00	CY	$4.10	$225,500.00
b-Cut/Export	0.00	CY	$8.60	$0.00
	10% Contingency			$22,550.00
	Subtotal			$248,050.00
2. Structual				
A- RETAINING WALL				
a- MASONARY RETAINING WALL	1,500.00	SF	$28.00	$42,000.00
B- DRAINAGE				
a- 8" PVC Pipe	35.00	LF	$25.00	$875.00
b-24" PVC Pipe	300.00	LF	$90.00	$27,000.00
c- Type "F" Catch Basin	1.00	EA	$3,410.00	$3,410.00
d- 24"X24" Catch Basin	2.00	EA	$650.00	$1,300.00
e- Rip Rap	9.00	CY	$150.00	$1,350.00
f- Brow Ditch	1,400.00	LF	$13.65	$19,110.00
C- SLOPE PLANTING & IRRIGATION				
a- Slope Planting	90,346.00	SF	$0.71	$64,507.04
b- Slope Irrigation	90,346.00	SF	$0.56	$50,232.38
c- Hydroseeding	1,395.00	SF	$0.11	$153.45
	Subtotal			$209,800.00
	10% Contingency			$20,980.00
	Total			$230,780.00

The latest Unit Price List can be obtained at the Grading & Improvement Counter

7.200 PLAN CHECKING

7.201 GRADING PLAN CHECK LIST

P.R.S. = Public Road Standards
R.S.D. = Regional Standard Drawings
S.E.P. = Standard Engineering Practice
SUSMP - Standard Urban Stormwater Mitigation Plan

Item	SOURCE
Assessor's Parcel No's	____
Bench mark	____
Best Management Practices (BMPs)	SUSMP
Brow ditch	R.S.D.
Cable TV	____
California coordinate in title block	____
Cash deposits (required cash deposits)	____
Civil engineer's name, address, phone number	____
Conditions of approval	____
Coastal Commission permit	____
Cross reference with street improvement plan	S.E.P.
Cross reference with drainage design	S.E.P.
Cross gutter	R.S.D.
Cut (C.Y.)	S.E.P.
Daylight line	S.E.P.
Declaration of responsible charge	
Drainage direction of flow	S.E.P.
Driveways	R.S.D.
Easements (drainage, sewer, water)	____
Encroachment permit	S.E.P.
Encroachment of grading on adjacent property	S.E.P.
Excavation (C.Y.)	S.E.P.
Existing contours	S.E.P.
Existing cut slopes	S.E.P.
Existing daylight line	S.E.P.
Existing grading	S.E.P.
Existing electrical service conduit	____

Existing fill slope	S.E.P.
Existing gas service	S.E.P.
Existing pad elevations	S.E.P.
Existing spot elevations	S.E.P.
Existing street grades	S.E.P.
Existing storm drain	S.E.P.
Existing sewer main	S.E.P.
Existing telephone service conduit	S.E.P.
Existing water main	S.E.P.
Fees (required fees)	____
Fill (C.Y.)	S.E.P.
Flood control clearance	S.E.P.
General notes	
Grading details (DS-8, DS-10, DS-11, D-75)	R.S.D.
Grades (contours, spot elevations)	S.E.P.
Grades, streets (length of vertical curves, B.V.C.&E.V.C.)	P.R.S. S.E.P.
Health Department clearance	____
Illegal grading file checking	____
Key map	S.E.P.
Legal description	____
Legal lot (proof)	____
Lot numbers	S.E.P.
L-number in the title block	____
Low Impact Development (LID)	SUSMP
Masonry sound attenuation wall	____
North arrow	S.E.P.
Off-site grading (permits)	____
Owner's name, address, phone number	____
Pacific Telephone	____
Pad elevations	S.E.P.
Permittee's name, address, phone number	____
Permits (habitat loss permit, rezone, special use permit, TM, TPM)	____
Property line	____

Purpose of grading (in the title block)	____
Retaining walls	____
San Diego Gas & Electric	____
Set back (DS-11)	R.S.D.
Sewer	____
Sheet size (24"x36")	
Sight distance (horizontal, vertical)	R.S.D.
Site/project address	R.S.D.
DS-20A & DS-20B	
Slopes over three feet in height	S.E.P.
Slope ratios	S.E.P.
Slope (top/toe), grade break	S.E.P.
Soils engineer certification	____
Source of Topography	____
Typical berm/swale at top of fill	____
Typical lot drainage	S.E.P.
Typical Lot Grading	S.E.P.
Typical grading of street section	S.E.P.
Vicinity Map	____
Water	____

NOTES:

a) A cost estimate must be submitted for a plan >3000 cy including all items to be constructed per the Grading Permit.

b) Plans<3000 cy include those items requiring structural inspection such as drainage, retaining walls, irrigation systems, etc.

c) If more than 500 yards are to be removed from the site, see the Ordinance amending the Section of the Zoning Ordinance regarding Borrow Pits.

d) If project is on land zoned for multi-residential development, commercial, industrial, manufacturing, or other more intensive use, the grading plan will have to be compared with the street improvements required by Centerline Ordinance if any.

APPENDIX

CHAPTER 4
APPENDIX

8.100 GENERAL NOTES (Latest as required by DPW Project Team)

8.101 STREET IMPROVEMENT PLAN GENERAL NOTES

1. A PERMIT SHALL BE OBTAINED FROM THE COUNTY DEPARTMENT OF PUBLIC WORKS FOR ANY WORK WITHIN THE STREET RIGHT-OF-WAY.

2. THE STRUCTURAL SECTION SHALL BE IN ACCORDANCE WITH SAN DIEGO COUNTY STANDARDS AND AS APPROVED BY THE MATERIALS LABORATORY.

3. APPROVAL OF THESE IMPROVEMENT PLANS AS SHOWN DOES NOT CONSTITUTE APPROVAL OF ANY CONSTRUCTION OUTSIDE THE PROJECT BOUNDARY.

4. ALL UNDERGROUND UTILITIES WITHIN THE STREET RIGHT-OF-WAY SHALL BE CONSTRUCTED, CONNECTED AND TESTED PRIOR TO CONSTRUCTION OF BERM, CURB, CROSS-GUTTER AND PAVING.

5. THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND FACILITIES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO OTHER EXISTING FACILITIES EXCEPT AS SHOWN ON THESE PLANS. HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING FACILITY SHOWN HEREON AND ANY OTHER WHICH IS NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

6. LOCATION AND ELEVATION OF IMPROVEMENTS TO BE MET BY WORK TO BE DONE SHALL BE CONFIRMED BY FIELD MEASUREMENTS PRIOR TO CONSTRUCTION OF NEW WORK. CONTRACTOR WILL MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND FACILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES.

7. THE CONTRACTOR SHALL NOTIFY THE SAN DIEGO GAS & ELECTRIC COMPANY PRIOR TO STARTING WORK NEAR COMPANY FACILITIES AND SHALL COORDINATE HIS/HER WORK WITH COMPANY REPRESENTATIVES.

NOTICE:

ALL ELECTRICAL AND GAS SERVICES WITHIN THIS PROJECT ARE 'UNDERGROUND INSTALLATIONS'. FOR LOCATION OF ELECTRICAL CABLES AND GAS PIPING AND APPURTENANCES CONTACT THE SAN DIEGO GAS & ELECTRIC COMPANY.

8. THE CONTRACTOR SHALL NOTIFY THE PACIFIC TELEPHONE COMPANY PRIOR TO STARTING WORK NEAR COMPANY FACILITIES AND SHALL COORDINATE HIS/HER WORK WITH COMPANY REPRESENTATIVES.

NOTICE:

ALL TELEPHONE SERVICES WITHIN THIS PROJECT BOUNDARY ARE 'UNDERGROUND INSTALLATIONS'. FOR LOCATION OF CABLES AND APPURTENANCES CONTACT THE _____TELEPHONE COMPANY

9. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO CONTACT THE UTILITY AGENCIES, ADVISE THEM OF THE PROPOSED IMPROVEMENTS, AND BEAR THE COST OR RELOCATIONS, IF NEEDED.

10. ALL TELEVISION SERVICES WITHIN THIS PROJECT ARE 'UNDERGROUND INSTALLATIONS'. FOR LOCATION OF CABLES AND APPURTENANCES CONTACT APPROPRIATE COMPANY.

11. CONSTRUCT A PUBLIC STREET LIGHT SYSTEM CONFORMING TO SAN DIEGO COUNTY STANDARDS AND STREET LIGHT SPECIFICATIONS. POWER SOURCES AND RUNS SHALL BE SHOWN ON THE "AS-BUILT" IMPROVEMENT DRAWINGS. ALL POWER SOURCES SHALL BE LOCATED WITH THE DEDICATED RIGHT-OF-WAY.

12. NO PAVING SHALL BE DONE UNTIL EXISTING POWER POLES ARE RELOCATED OUTSIDE THE AREAS TO BE PAVED.

13. PRIVATE ROAD IMPROVEMENTS SHOWN HEREON ARE FOR INFORMATION ONLY. COUNTY OFFICIALS SIGNATURE HEREON DOES NOT CONSTITUTE APPROVAL OR

RESPONSIBILITY OF ANY KIND FOR THE DESIGN OR CONSTRUCTION OF THESE PRIVATE IMPROVEMENTS.

14. ALL SIGNS TO BE ALUMINUM WITH 3M HIGH INTENSITY TYPE REFLECTIVE FACE OR EQUIVALENT.

15. CONTRACTOR WILL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY STRIPING, PAVEMENT MARKERS, OR LEGENDS OBLITERATED BY THE CONSTRUCTION OF THIS PROJECT.

16. ALL NEW STRIPING AND SANDBLASTING OF REDUNDANT STRIPING SHALL BE DONE BY CONTRACTOR.

17. ALL CUT AND FILL SLOPES THREE FEET (3') CREATED BY GRADING FOR STREETS AND DRIVEWAYS SHALL BE HYDROSEEDED WITH SAN DIEGO COUNTY APPROVED HYDROSEED MIXTURE. HYDROSEEDED SLOPES SHALL BE IRRIGATED BY WATER TRUCK UNTIL THE MIXTURE GERMINATES AND GROWTH IS ESTABLISHED.

18. THE CONSTRUCTION OF ONE PCC STANDARD DRIVEWAY PER LOT, LOCATION TO BE DETERMINED IN THE FIELD BY THE ENGINEER OF WORK. PCC SURFACING OF DRIVEWAY TO EXTEND FROM CURB TO PROPERTY LINE. USE STANDARD DRAWINGS G-14, G-15, G-16.

19. ALL TREES WITHIN THE COUNTY RIGHT-OF-WAY TO BE REMOVED.

8.102 GRADING PLAN GENERAL NOTES

1. APPROVAL OF THIS GRADING PLAN DOES NOT CONSTITUTE APPROVAL OF VERTICAL OR HORIZONTAL ALIGNMENT OF ANY PRIVATE ROAD SHOWN HEREON FOR COUNTY ROAD PURPOSES.

2. FINAL APPROVAL OF THESE GRADING PLANS SUBJECT TO FINAL APPROVAL OF THE ASSOCIATED IMPROVEMENT PLANS WHERE APPLICABLE. FINAL CURB GRADE ELEVATIONS MAY REQUIRE CHANGES IN THESE PLANS.

3. IMPORT MATERIAL SHALL BE OBTAINED FROM A LEGAL SITE.

4. A CONSTRUCTION, EXCAVATION OR ENCROACHMENT PERMIT FROM THE DEPARTMENT OF PUBLIC WORKS WILL BE REQUIRED FOR ANY WORK IN THE COUNTY RIGHT-OF-WAY.

5. ALL SLOPES OVER THREE FEET IN HEIGHT WILL BE PLANTED IN ACCORDANCE WITH SAN DIEGO COUNTY SPECIFICATIONS.

6. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK. NOTICE OF PROPOSED WORK SHALL BE GIVEN TO THE FOLLOWING AGENCIES:

SAN DIEGO GAS & ELECTRIC:	TELEPHONE NO. _____
AT&T/PACIFIC BELL:	TELEPHONE NO. _____
CATV:	TELEPHONE NO. _____
SEWER:	TELEPHONE NO. _____
WATER:	TELEPHONE NO. _____

7. A SOILS REPORT MAY BE REQUIRED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.

8. APPROVAL OF THESE PLANS BY THE DIRECTOR OF PUBLIC WORKS DOES NOT AUTHORIZE ANY WORK OR GRADING TO BE PERFORMED UNTIL THE PROPERTY OWNER'S PERMISSION HAS BEEN OBTAINED AND VALID GRADING PERMIT HAS BEEN ISSUED.

9. THE DIRECTOR OF PUBLIC WORKS' APPROVAL OF THESE PLANS DOES NOT CONSTITUTE COUNTY BUILDING OFFICIAL APPROVAL OF ANY FOUNDATION FOR STRUCTURES TO BE PLACED ON THE ITEMS COVERED BY THESE PLANS. NO WAIVER OF THE GRADING ORDINANCE REQUIREMENTS CONCERNING MINIMUM COVER EXPANSIVE SOIL IS MADE OR IMPLIED (SECTIONS 87.403 & 87.410). ANY SUCH WAIVER MUST BE OBTAINED FROM THE DIRECTOR OF PLANNING AND LAND USE.

10. ALL OPERTIONS CONDUCTED ON THE PREMISES, INCLUDING THE WARMING UP, REPAIR, ARRIVAL, DEPARTURE OR RUNNING OF TRUCKS, EARTHMOVING EQUIPMENT, CONSTRUCTION EQUIPMENT AND ANY

OTHER ASSOCIATED GRADING EQUIPMENT SHALL BE LIMITED TO THE PERIOD BETWEEN 7:00 AM AND 6:00 PM EACH DAY, MONDAY THRU SATURDAY, AND NO EARTHMOVING OR GRADING OPERATIONS SHALL BE CONDUCTED ON THE PREMISES ON SUNDAYS OR HOLIDAYS.

11. ALL MAJOR SLOPES SHALL BE ROUNDED INTO EXISTING TERRAIN TO PRODUCE A CONTOURED TRANSITION FROM CUT OR FILL FACES TO NATURAL GROUND AND ABUTTING CUT OR FILL SURFACES.

12. NOTWITHSTANDING THE MINIMUM STANDARDS SET FORTH IN THE GRADING ORDINANCE AND NOTWITHSTANDING THE APPROVAL OF THESE GRADING PLANS, THE PERMITTEE IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO ADJACENT PROPERTY. NO PERSON SHALL EXCAVATE ON LAND SO CLOSE TO THE PROPERTY LINE AS TO ENDANGER ANY PROTECTING SUCH PROPERTY FROM SETTLING, CRACKING, EROSION SILTING, SCOUR OR OTHER DAMAGE WHICH MIGHT RESULT FROM THE GRADING DESCRIBED ON THIS PLAN. THE COUNTY WILL HOLD THE PERMITTEE RESPONSIBLE FOR CORRECTION OF NON-DEDICTED IMPROVEMENTS WHICH DAMAGE ADJACENT PROPERTY.

13. SLOPE RATIOS:

    CUT – 1½:1 FOR MINOR SLOPES UNDER 15' HIGH OR IN ROCK
    2:1 FOR MAJOR SLOPES
    FILL - 2:1

    EXCAVATION:
    FILL:
    WASTE/IMPORT:

    (NOTE: A SEPARATE VALID PERMIT MUST EXIST FOR EITHER WASTE OR IMPORT AREAS)

14. SPECIAL CONDITION: IF ANY ARCHEOLOGICAL RESOURCES ARE DISCOVERED ON THE SITE OF THIS GRADING OPERATIONS, SUCH OPERATIONS WILL CEASE IMMEDIATELY, AND THE PERMITTEE WILL NOTIFY THE DIRECTOR OF PUBLIC WORKS OF THE DISCOVERY. GRADING OPERATIONS WILL NOT RECOMMENCE UNTIL

THE PERMITTEE HAS RECIVED WRITTEN AUTHORITY FROM THE DIRECTOR OF PUBLIC WORKS TO DO SO.

15. ALL GRADING DETAILS WILL BE IN ACCORDANCE WITH SAN DIEGO COUTY STANDARD DRAWINGS DS-8, DS-10, DS-11, AND D-75.

16. THE CONSTRUCTION OF ONE PCC STANDARD RESIDENTIAL DRIVEWAY PER LOT, LOCATION TO BE DETERMINED IN THE FIELD BY ENGINEER OF WORK. PCC SURFACING OF DRIVEWAY TO EXTEND FROM CURB TO PROPERTY LINE. USE STANDARD DRAWINGS G-14A, G-14B, G-14C, G-15, AND G-16.

17. FINISHED GRADING SHALL BE CERTIFIED BY A REGISTERED CIVIL ENGINEER AND INSPECTED BY THE COUNTY ENGINEER FOR DRAINAGE CLEARANCE (APPROVAL OF ROUGH GRADING DOES NOT CERTIFY FINISH GRADING BECAUSE OF POTENTIAL SURFACE DRAINAGE PROBLEMS THAT MAY BE CREATED BY LANDSCAPING ACCOMPLISHED AFTER ROUGH GRADING CERTIFICATION.).

8.103 WATER NOTES (typical)

Check with related water agency for specific water notes.

1. WATER WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS AND MATERIALS AS SPECIFIED IN THE OLIVENHAIN MUNICIPAL WATER DISTRICT STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF WATER MAINS AND FACILITIES, DATED MARCH 1997 WITH REVISIONS. CONTRACTOR SHALL HAVE A CURRENT COPY OF THE STANDARD SPECIFICATIONS ON THE JOB SITE AT ALL TIMES.

2. THE SUBMISSION AND REVIEW OF ALL SUBMITTALS (SHOP DRAWING, SIX SETS) AS REQUIRED BY THE STANDARD SPECIFICATIONS ARE TO BE ACCOMPLISHED PRIOR TO THE PRE CONSTRUCTION MEETING WITH THE DISTRICT'S INSPECTOR.

3. NO WORK MAY BEGIN OR PROCEED WITHOUT DIRECTION OF DISTRICT'S INSPECTOR. INSPECTOR'S SCHEDULING MUST BE 24-48 HOURS IN ADVANCE OF WORK.

4. WHERE ELEVATIONS AND GRADES ARE NOT SHOWN ON THE WATER MAIN PROFILE, TOP OF PIPE PROFILE IS 48-INCHES BELOW CENTERLINE OF FINISH GRADE OF STREET.

5. INSTALL A MINIMUM 1-INCH WATER SERVICE TO EACH LOT. METER TO BE LOCATED 5 FEET FROM A SIDE LOT LINE. A ¾-INCH HIGH LETTER 'W' SHALL BE CHISELED IN TOP OF EXISTING CURB OR IMPRINTED IN NEW CURB AT ALL WATER SERVICE CROSSINGS.

6. MANUAL AIR RELEASES SHALL BE INSTALLED AT ALL HIGH POINTS AND BLOW-OFFS AT ALL LOW POINTS IN THE WATER MAIN PROFILE. FIRE HYDRANTS MAY BE USED IN LIEU OF MANUAL AIR RELEASE OR BLOW-OFF WHEN LOCATED AT OR NEAR HIGH OR LOW POINTS. AS APPROVED BY THE DISTRICT'S REP.

7. UNLESS OTHERWISE NOTED, CONNECTIONS TO EXISTING MAINS SHALL BE MADE DRY. THE TIME AND DURATION OF ANY SHUTDOWNS OF EXISTING MAINS SHALL BE SUBJECT TO APPROVAL BY THE DISTRICT. DISTRICT SHALL BE NOTIFIED TWO WEEKS MINIMUM IN ADVANCE OF ANY SHUTDOWN.

8. CONTRACTOR SHALL COORDINATE WITH DISTRICT ALL ARRANGEMENTS FOR HIGH-LINING TEMPORARY SERVICES, ETC., PRIOR TO SHUTDOWNS. NO SHUTDOWNS WILL BE SCHEDULED ON A FRIDAY.

9. LINE VALVES, WHERE REQUIRED AT STREET INTERSECTIONS SHALL BE LOCATED ON THE PROLONGATION OF THE STREET RIGHT-OF-WAY WHENEVER POSSIBLE.

10. FIRE HYDRANTS, AS APPROVED BY THE APPROPRIATE FIRE DISTRICT AND MEETING THE DISTRICT'S STANDARD SPECIFICATIONS, ARE TO BE INSTALLED AT LOCATIONS SPECIFIED BY THE FIRE DISTRICT.

11. CONTRACTOR SHALL REVIEW ALL PROPOSED TRENCH WORK WITH CAL/OSHA. A COPY OF EXEMPTION LETTER OR TRENCHING PERMIT, IF REQUIRED, SHALL BE SUBMITTED TO THE DISTRICT PRIOR TO CONSTRUCTION.

12. ALL EXISTING FACILITIES WHICH MAY AFFECT FINAL DESIGN, IE, LINE CROSSINGS, LINE PARALLELING, OR PROPOSED CONNECTIONS SHALL BE FIELD VERIFIED. ALL EXISTING OR PROPOSED UTILITY CROSSINGS, OR UTILITIES WITHIN 10-FEET OF PROPOSED WATER MAINS, SHALL BE SHOWN ON IMPROVEMENT PLANS.

13. ALL WATER SERVICES FOR IRRIGATION, MULTIPLE RESIDENTIAL COMPLEXES AND COMMERCIAL OR INDUSTRIAL DEVELOPMENTS SHALL HAVE AN APPROVED BACKFLOW PREVENTION DEVICE ON CUSTOMER'S SIDE OF WATER METER.

14. THE WATER SYSTEM SHALL BE PRESSURE TESTED IN ACCORDANCE WITH THE PROCEDURES IN THE STANDARD SPECIFICATIONS. THE CLASS OF PIPE SHALL BE USED AS THE DESIGNATED WORKING PRESSURE FOR TESTING ALL PIPE, VALVES (CLOSED) AND APPURTENANCES.

15. CONTRACTOR TO TIE OFF ALL VALVE LOCATIONS AND PROVIDE WRITTEN DIMENSIONS TO INSPECTOR IMMEDIATELY UPON INSTALLATION OF VALVES.

16. ALL DEFLECTIONS (HORIZONTAL AND VERTICAL) SHALL BE MADE BY USE OF JOINT COUPLINGS WITH 4" MAXIMUM DEFLECTION PER COUPLING (2" PER JOINT). NO BENDING (CURVING) OF PIPE SHALL BE PERMITTED.

8.104 SEWER NOTES (typical)

Check with related sewer agency for specific sewer notes.

UNLESS OTHERWISE INDICATED HEREIN, ALL WORK SHALL BE DONE IN ACCORDANCE WITH:

A. THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SSPWC) LATEST APPROVED EDITION.

B. THE REGIONAL SUPPLEMENTAL AMENDMENTS TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

C. THE SAN DIEGO REGIONAL STANDARD DRAWINGS (SDRSD).

AND THE FOLLOWING SPECIAL PROVISIONS:

1. TRENCH WIDTH SHALL BE PER SDRSD NO S-4, TYPE C, FOR PIPE UP TO 15 INCHES, UNLESS OTHERWISE NOTED. FOR PIPE 15 INCHES AND OVER, TRENCH WIDTH SHALL BE PER SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SECTION 306-1.2.13.

2. PIPE AND BEDDING CONDITIONS SHALL BE PER SDRSD S-4, TYPE C, FOR PIPE UP TO 18 INCHES. FOR PIPE 18 INCHES AND ABOVE REFER TO SSPWC SEC 306-1.2.13.

   PVC PIPE BEDDING FROM BOTTOM OF PIPE TO 6" MINIMUM ABOVE THE PIPE SHALL BE ¾ INCH CRUSHED ROCK.

3. AFTER COMPLETION OF PIPE LAYING, ALL MAIN LINE SEWERS, SERVICE LATERALS AND STRUCTURES SHALL BE TESTED IN THE PRESENCE OF THE INSPECTOR. AIR PRESSURE TEST, PER SSPWC SECTION 306-1.4.1, AND MANDREL TEST, PER SECTION 306-1.212 SHALL BE USED UNLESS OTHERWISE DIRECTED BY THE INSPECTOR. FINAL ACCEPTANCE OF SEWER LINES WILL BE SUBJECT TO INTERNAL TELEVISION INSPECTION. IT WILL BE THE PERMITTEE'S RESPONSIBILITY TO PAY FOR THE COST OF THIS WORK.

4. THE CONSTRUCTION OF PCC SEWER MANHOLE PER SDRSD NO. 17. POURED-IN-PLACE MANHOLE BASES SHALL BE A MONOLITHIC POUR FINISHED COMPLETE AT TIME OF POUR.

5. THE CONSTRUCTION OF 4 INCH SEWER LATERAL PER SDRSD NO S-13 & S-14 LATERALS SHALL NOT DISCHARGE DIRECTLY INTO MANHOLD. A CLEANOUT SHALL BE INSTALLED APPROXIMATELY TWO FEET INSIDE THE PROPERTY LINE.

6. THE CONSTRUCTION OF CUT-OFF WALLS SHALL BE PER SDRSD NO. S-10 TYPE 'A' ON ALL SEGMENTS HAVING A SLOPE OF 25% OR GREATER. CONSTRUCTION OF CONCRETE ANCHOR WALLS SHALL BE PER S-9.

7. ALL MAINS AND LATERALS SHALL BE CONSTRUCTED WITH 48 INCH MINIMUM COVER, PROVIDED THAT THE INVERT OF

THE LATERAL AT THE PROPERTY LINE IS ABOVE THE SOFFIT LINE OF THE SEWER MAIN.

8. THE FINAL LOCATION AND ELEVATION OF SEWER AND WATER LATERALS SHALL BE SHOWN ON ORIGINAL PLANS, PRIOR TO ACCEPTANCE FOR PUBLIC USE.

9. ALL DESIGN CHANGES OF SEWER MAINS SHALL BE APPROVED BY THE DISTRICT ENGINEER IN WRITING PRIOR TO ACCEPTANCE OF WORK.

10. FILL AREAS MUST BE COMPACTED TO 90% PRIOR TO PIPE INSTALLATION.

11. THE CONTRACTOR SHALL NOTIFY THE DISTRICT'S INSPECTION DEPARTMENT 48 HOURS IN ADVANCE OF BEGINNING WORK TO ARRANGE FOR INSPECTION OF PROJECT.

12. THE CONTRACTOR SHALL PURCHASE A PERMIT FROM THE COUNTY DEPARTMENT OF PUBLIC WORKS FOR ANY EXCAVATION WITHIN EXISTING COUNTY RIGHT-OF-WAY.

13. CONTRACT RECORD DRAWINGS MUST BE SUBMITTED PRIOR TO FINAL ACCEPTANCE OF THE WORK. THEY MUST REFLECT POST CONSTRUCTION VERIFICATION OF PIPE LENGTHS AND INVERT ELEVATIONS.

14. THE CONTRACTOR SHALL GUARANTEE ALL WORK FOR A PERIOD OF 1 YEAR AFTER THE DATE OF ACCEPTANCE OF THE WORK BY THE OWNER AND SHALL REPAIR OR REPLACE ANY OR ALL SUCH WORK, TOGETHER WITH ANY OTHER WORK WHICH MAY BE DISPLACED IN SO DOING, THAT MAY PROVE DEFECTIVE IN WORKMANSHIP AND/OR MATERIALS WITHIN THE 1 YEAR PERIOD FROM DATE OF ACCEPTANCE WITHOUT EXPENSE WHATSOEVER TO THE OWNER, ORDINARY WEAR AND TEAR, UNUSUAL ABUSE OR NEGLECT EXCEPTED.

15. THE CONTRACTOR SHALL FURNISH AND INSTALL, PER SPECIFICATIONS, THE APPROPRIATE BURIED UTILITY WARNING AND IDENTIFICATION TAPE ABOVE ALL PUBLIC SEWER LINES INCLUDING SEWER LATERALS LOCATED IN PUBLIC RIGHT-OF-WAY.

16. CONTRACTOR MUST CALL 'DIG ALERT OF SOUTHERN CALIFORNIA' TO HAVE LATEST INFORMATION ON UTILITIES.

17. AT ALL MANHOLES, THE MINIMUM FALL ACROSS MANHOLES SHALL BE 0.1 FT. AT RIGHT ANGLES LARGER THAN 45 DEGREES, ALLOW 0.2 FT. OF FALL

8.105 BASIS OF BEARING

"SEE EXAMPLE BELOW"

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE LINE BETWEEN TRIANGULATION STATIONS 50-40-01 AND 50-44-01. AS SAID STATIONS ARE PUBLISHED IN THE SAN DIEGO HORIZONTAL CONTROL BOOK, I.E. N 00□35'52" E. SAID BEARINGS AND THE BEARING SHOWN HEREON ARE IN THE TERMS OF THE CALIFORNIA COORDINATE SYSTEM 83 DATUM ZONE 6. QUOTED BEARINGS FROM REFERENCE MAPS OR DEEDS MAY OR MAY NOT BE IN TERMS OF SAID SYSTEM.

8.106 DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSION CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE COUNTY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR THE PROJECT DESIGN.

(Engineer's Company Name SEAL
Address and Telephone Number)

(Engineer's Name and Title) DATE
(Registration Number)
Expiration Date _____

8.107 RECORD PLAN DECLARATION OF RESPONSIBLE CHARGE OF RECORD ENGINEER

I hereby declare that as the Engineer of Responsible Charge of the record plans for this project, I have reviewed the noted and County approved construction changes, I have observed the completed construction of the engineering work as shown on the record plans, and reviewed the contractor's records of any changes made during construction. Based on my observations and review, it is my opinion that the completed construction is in substantial conformance with the record plans.

I certify that all changes and/or additions made during construction, as documented by the contractor's records and provided to me, have been incorporated into the record plans.

(Engineer's Company Name SEAL
Address and Telephone Number)

_____

(Engineer's Name and Title) DATE
(Registration Number)
Expiration Date _____

8.108 OWNER/PERMITTEE OWNER'S CERTIFICATE

IT IS AGREED THAT FIELD CONDITIONS MAY REQUIRE CHANGES TO THESE PLANS.

IT IS FURTHER AGREED THAT THE DEVELOPER SHALL HAVE A REGISTERED CIVIL ENGINEER MAKE SUCH CHANGES, ALTERATIONS, OR ADDITIONS TO THESE PLANS WHICH THE DIRECTOR OF PUBLIC WORKS DETERMINES ARE NECESSARY AND DESIRABLE FOR THEN PROPER COMPLETION OF THE IMPROVEMENTS.

I FURTHER AGREE TO COMMENCE WORK ON ANY IMPROVEMENTS SHOWN ON THESE PLANS WITHIN 60 DAYS AFTER ISSUANCE OF CONSTRUCTION PERMIT AND TO PURSUE SUCH WORK ACTIVELY ON EVERY NORMAL WORKING DAY UNTIL COMPLETED, IRRESPECTIVE AND INDEPENDENT OF ANY OTHER WORK ASSOCIATED WITH THIS PROJECT UNDER MY CONTROL.

PROPERTY APN: _____

(No. of) ACRE

(Owner/Permittee Name Address Telephone Number)

PROPERTY:

(Name of Development Company)

(Owner/Permittee Name, Title) (Date)

8.109 EROSION CONTROL NOTES

1. EROSION CONTROL MEASURES TO CONTROL SOIL MOVEMENT SATISFACTORY TO THE COUNTY DEPARTMENT OF PUBLIC WORKS IN EVENT THE SITE IS EXPOSED TO EROSION DURING THE PERIOD BETWEEN OCTOBER 1ST TO APRIL 30TH. EROSION CONTROL MEASURES SHALL INCLUDE BUT NOT BE LIMITED TO, SLOPE PROTECTION, INSTALLATION OF JUTE MATTING, OR APPROVED EQUIVALENT, DESILTING BASINS, ENERGY DISSIPATORS, SILT CONTROL, SAND BAGGING AND STORM DRAINS.

2. ALL BUILDING PADS TO BE DIKED AND THE DIKES MAINTAINED TO PREVENT WATER FROM FLOWING FROM THE PADS AND CAUSING EROSION, OR CONSTRUCT DRAINAGE FACILITIES TO THE SATISFACTION OF THE COUNTY DEPARMENT OF PUBLIC WORKS THAT WILL ALLOW WATER TO DRAIN FROM THE PAD WITHOUT CAUSING EROSION.

3. TOPS OF ALL SLOPES TO BE DIKED OR TRENCHED TO PREVENT WATER FROM FLOWING OVER THE CREST OF SLOPES.

4. AS SOON AS CUTS OR EMBANKMENTS ARE COMPLETED, BUT NOT LATER THAN NOVEMBER 1ST, ALL CUT AND FILL SHALL BE STABILIZED WITH A HYDROMULCH MIXTURE OR AN EQUAL TREATMENT APPROVED BY THE COUNTY DEPARTMENT OF PUBLIC WORKS. BETWEEN OCTOBER 1ST AND APRIL 30TH, APPROVED SLOPE PROTECTION MEASURES SHALL PROCEED IMMEDIATELY BEHIND THE EXPOSURE OF CUT SLOPES AND/OR THE CREATION OF EMBANKMENT SLOPES.

5. AN IRRIGATION SYSTEM TO BE INSTALLED NOT LATER THAN MAY 15TH, FOLLOWING THE PLANTING OF SLOPES.

6. THE DEVELOPER TO MAINTAIN THE PLANTING AND EROSION CONTROL MEASURES DESCRIBED ABOVE UNTIL RELIEVED OF THE SAME BY THE COUNTY DEPARTMENT OF PUBLIC WORKS. THE DEVELOPER TO REMOVE ALL SOIL INTERCEPTED BY THE SAND BAGS, CATCH BASINS AND DESILTING BASINS TO KEEP THESE FACILITIES CLEAN AND FREE OF SILT AND SAND AS DIRECTED BY THE COUNTY DEPARMENT OF PUBLIC WORKS. THE DEVELOPER SHALL REPAIR ANY ERODED SLOPES AS DIRECTED BY THE COUNTY DEPARTMENT OF PUBLIC WORKS.

8.200 CONTRACTOR'S NOTE

Construction contractor agrees that in accordance with generally accepted construction practices, construction contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property; that this requirement shall be made to apply continuously and not be limited to normal working hours, and construction contractor further agrees to defend, indemnify and hold County of San Diego harmless from any and all liability, real or alleged, in connection with the performance of work on this project, excepting liability arising from the sole negligence of County of San Diego professionals.

8.300 ENGINEER'S NOTE

UNAUTHORIZED CHANGES & USES: The engineer of work preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.

8.400 GRADING PERMITS REQUIRED/EXCEPTIONS INFORMATION

Please refer to Grading Ordinance Section 87.201 Permit Required – Exceptions

Departments issuing Grading Permits

1. Department of Public Works Grading & Improvement Counter
   County Operations Center, Kearney Mesa

2. Department of Planning and Land Use Building Division
   County Operations Center, Kearney Mesa

Minor Grading Permit

Please refer to Grading Ordinance Section 87.206 Minor Grading Permit Issued by the Department of Planning and Land Use

Agricultural Grading

Please refer to Grading Ordinance Section 87.205 Agricultural Grading Application

Agricultural Grading Processing
County Operations Center, Kearney Mesa

Agricultural Grading Inspector
County Operations Center, Kearney Mesa

8.500 UNIT PRICE LIST (Effective September, 2009)

[The latest Unit Price List can be obtained at the Grading & Improvement Counter]

EARTHWORK

ITEM	DESCRIPTION	UNIT	PRICE
Grading	Embankment/ Excavation		
	0-1000	C.Y.	$ 58.00
	1000-20,000	C.Y.	25.00
	20,001	C.Y.	17.00
	Export or Import		
	0-1,000	C.Y.	40.00
	1,001 +	C.Y.	25.00
	> 20,000	C.Y.	13.00
Clearing and Grubbing		S.F.	.50
Erosion Control	Sand/Gravel bag	EA.	5.00
	Jute Mat (not as independent BMP)	S.F.	.45
	Straw Mat	S.F.	.30
	Straw bales	EA.	5.50
	Silt Fence	L.F.	6.00
	Fiber rolls	L.F.	5.00
	Wood Fiber Mat	S.F.	.30
	Coconut Fiber Mat	S.F.	.45
	Hydro-Seed	S.F.	.35
	Bonded Fiber Matrix	S.F.	.10
	Guar binder	S.F.	.40
Sub drain	4-6"	L.F.	33.00
	8"	L.F.	38.00
Subdrain headwall		EA.	3,840.00

1. Ranges should be reduced. Small Quantities will be much higher than that shown.

2. CIP Contracts generally do not pay for export.

LANDSCAPING

ITEM	DESCRIPTION	UNIT	PRICE
PLANTING			
Shrubs	1 Gallon	EA.	38.00
	5 Gallon	EA.	112.00
Slope Planting (Ground Cover)		S.F.	.55

Slope Planting (Ground Cover + Trees and Shrubs)		S.F.	.87
Slope Planting (Hydro-seeding)		S.F.	.15
Tree	5 Gallon	EA.	67.00
	15 Gallon	EA.	175.00
	24" Box	EA.	58.00
	36" Box	EA.	406.00
	48" Box	EA.	754.00
Tree Grate	W/2 frame	EA.	93.00
Tree Maintenance		Tree/year	232.00
IRRIGATION			
Backflow prevention	W/Enclosure	EA.	
Assembly			2,140.00
Slope irrigation		S.F.	.65

3. Numbers appear high. Prices shown are based on a 5% per year increase over the last 5 years. Recommend obtaining current cost data from ESU.

4. Varies based on type of tree and quantity in project.

STORM DRAIN SYSTEMS

ITEM	DESCRIPTION	UNIT	PRICE
AC Spillway	D-22	EA.	370.00
Box Culvert	P.C.C.	C.Y.	1,400.00
Catch Basin	Type G (D-8)	EA.	5,500.00
	Type F (D-7)	EA.	5,000.00
	Type I (D-29)	EA.	4,700.00
Cleanouts	Type A (D-9)	EA.	4,500.00
(Storm Drain)	Type B (D-10)	EA.	4,700.00
Concrete	Structural	C.Y.	670.00
Concrete Energy Dissipater	D-41	EA.	10,000.00
Concrete Lug	D-63	EA.	1,200.00
Concrete Pipe Collar	D-62	EA.	2,900.00
Culvert, Pipe	12" or less	L.F.	63.00
Reinforced Concrete	18"	L.F.	111.00
(RCP)	24"	L.F.	127.00
	30"	L.F.	137.00
	36"	L.F.	165.00
	42"	L.F.	180.00
	48"	L.F.	190.00
	54"	L.F.	210.00
	60"	L.F.	270.00
	72"	L.F.	480.00

Culvert (PVC Pipe)	4"-6"	L.F.	42.00
	8"-12"	L.F.	55.00
	18"	L.F.	65.00
	24"	L.F.	80.00
	30"	L.F.	90.00
	36"	L.F.	100.00
	42"	L.F.	120.00
Curb Inlet	Type A (D-1)	EA.	6,585.00
	Type B (D-2)	EA.	6,585.00
	Type C (D-3)	EA.	6,585.00
Curb Outlet	Type A (D-25)	EA.	4,600.00
Curb outlet, Sidewalk	D-27		
Underdrain Pipe			850.00
Treatment Control BMP	Per Detail on Plan	EA	

5. CIP method of payment for AC overside drains is payment per ton for AC material and payment per SY to place AC misc. area. Example: Based on 6 SY @ $50/SY and 0.70 tons @ $100/ton say $370.

6. CIP does not specify PVC pipe for culverts. The CIP bid history does include prices for underdrains, yard drains and sewer laterals which generally include the excavation and backfill. CIP also has bid prices for utility conduits. However prices vary significantly based on quantity.

ITEM	DESCRIPTION	UNIT	PRICE
Curtain Wall	D-38	EA.	800.00
	D-72	EA.	1,000.00
Drainage Channel	P.C.C (D-70 & D-71)	L.F.	1,130.00
Drainage Ditch	D-75	L.F.	28.00
HEC-2 Study and FEMA revision		L.S.	33,000.00
Headwalls	Gravity Type (Up to 60")	EA.	3,300.00
	Gravity Type (Larger than 60")	EA.	6,400.00
	Wing Type (Up to 60")	EA.	5,300.00
	Wing Type (Larger than 60")	EA.	7,700.00
Inlet Apron	D-39	EA.	1,800.00
Pipe Collar	D-62	EA.	3,700.00
Rip Rap			
(Energy Dissipater)	D-40 (.25 Ton)	C.Y.	190.00
	(.50 Ton)	C.Y.	200.00
	(1.0 Ton)	C.Y.	210.00
	(2.0 Ton)	C.Y.	210.00
	(4.0 Ton)	C.Y.	240.00

SURFACE IMPROVEMENT

ITEM	DESCRIPTION	UNIT	PRICE
A.C Berm (G-5)	4" A.C.	L.F.	9.00
	6" A.C.	L.F.	10.00
	8" A.C.	L.F.	12.00
A.C. Overlay	1"-2"	S.F.	1.40
Alley Apron	G-17	S.F.	8.70
Curb+Gutter	Removal	L.F.	3.50
	Type B-2 (G-6)	L.F.	23.50
	6" Type G (G-2)	L.F.	23.50
	8" Type G (G-2)	L.F.	26.00
	6" Type H (G-2)	L.F.	27.00
	8" Type H (G-2)	L.F.	33.00
	Rolled Curb (G-4)	L.F.	29.00
Cutoff Wall @ End of Pvmt.	G-22,23	EA.	1,000.00
Gutter (Cross-Gutter)	G-12, G-13	S.F.	8.70
Driveway	G-14 A,B,C	S.F.	7.80
Median,	Stamped concrete	S.F.	5.60
(SDG-112)	Decorative concrete	S.F.	7.20
	Interlocking Pavers	S.F.	11.50
Pavement Design	Schedule J	S.F.	5.50
Paving, AC	1" Surface	S.F.	.82
	2" Surface	S.F.	1.10
	3" Surface	S.F.	1.65
	4" Surface	S.F.	2.20
	5" Surface	S.F.	2.75
Paving, (CTB)	4" Surface	S.F.	1.10
	5" Surface	S.F.	1.20
	6" Surface	S.F.	1.40
	8" Surface	S.F.	1.80
	10" Surface	S.F.	1.90
Paving P.C.C.	5"	S.F.	5.50
	5.5"	S.F.	6.00
	6"	S.F.	6.50
	8"	S.F.	7.10
	9"	S.F.	8.20
Paving Preparation of Sub grade	-	S.F.	.70
Ped Ramp	G-27 thr G-30		
	(0-4)	EA.	1,600.00
	4+	EA.	1,400.00
Ped Ramp	Alley (G-31)	EA.	1,800.00
Sidewalk	Removal	S.F.	3.00
Sidewalk	0-5000	S.F.	9.00
(G-7)	5000+	S.F.	7.00
Trench Resurfacing	SDG-107 & SDG-108	L.F.	37.00

TRAFFIC

ITEM	DESCRIPTION	UNIT	PRICE
Detector Loops		EA.	680.00
Video Detection		Per approach	8,700.00
Pull Box	Type 3	EA.	980.00
	Type 5	EA.	1,050.00
	Type 6	EA.	1,120.00
Signal Ahead Flasher		EA.	4,950.00
Remove Striping		L.F.	2.20
Relocate Pull Box		EA.	500.00
Street Light	L.P. Sodium (E-1)	EA.	6,600.00
	H.P. Sodium	EA.	6,600.00
Street Name Sign	SDM-102	EA.	520.00
Street Striping	0 – 4000'	L.F.	1.39
	4000' +	L.F.	1.00
	2 x 2 Tee	L.S.	109,000.00
Traffic Signal (based on number of lanes at intersection)	2 x 2	L.S.	200,000.00
	4 x 2	L.S.	220,000.00
	4 x 4	L.S.	245,000.00
	4 x 6	L.S.	260,000.00
	6 x 6	L.S.	275,000.00
	8 x 6	L.S.	330,000.00
Traffic Control	Estimated improvement	0 – 1,000,000	5%
	Estimated improvement	1,000,000+	3%
Traffic Signal		L.F.	22.00

7. These numbers are from Caltrans bid history and appear high. CIP projects generally do not itemize pull boxes and hence we have no bid history.

UTILITIES

ITEM	DESCRIPTION	UNIT	PRICE
A- *SEWER*			
Concrete Anchor	S – 9	L.F.	1,400.00
Concrete Cradle	8" Sewer	L.F.	80.00
(S-6)	12" Sewer	L.F.	90.00
	15" Sewer	L.F.	100.00
	24" Sewer	L.F.	120.00
	48" Sewer	L.F.	250.00
Concrete encasement	12" Sewer	L.F.	120.00
(S-7)	15" Sewer	L.F.	130.00
	24" Sewer	L.F.	160.00
	48" Sewer	L.F.	325.00
Cutoff Wall	Type B, S-10	EA.	3,000.00

Manhole	S-17	EA.	7,000.00
	S-2	EA.	7,000.00
	4 x 3 w/plastic liner	EA.	8,500.00
	5 x 3 w/plastic liner	EA.	11,000.00
	Locking cover	EA.	1,000.00
Pressure Sewer Pipe	4" PVC Pipe	L.F.	60.00
	6" PVC Pipe	L.F.	80.00
Sewer Access Rd.	4" Decomposed Granite	S.F.	5.80
	Concrete Surface	S.F.	50.00
Sewer Lateral (house connection, S-3)	4", 30' Long 6", 30' Long	EA. EA.	1,450.00 2,700.00
Sewer Main (S-4) * (All materials)	6"	L.F.	70.00
	8"	L.F.	80.50
	10"	L.F.	90.00
	12"	L.F.	100.00
	15"	L.F.	120.00
	18"	L.F.	150.00
* Add 2% for every foot of cover over 5 feet			
B – WATER			
Air & Vacuum valve	1"	EA.	2,800.00
(W-4)	2"	EA.	3,400.00
Blow-off Assembly	2" Type A (W-6)	EA.	1,100.00
	3" Type A	EA.	2,100.00

8. CIP generally pays for concrete cradles as part of the unit price per LF for the pipe or as minor concrete per CY.

ITEM	DESCRIPTION	UNIT	PRICE
Blow-off Assembly	(SDW-106) 2" Type B,C,D (W-7)	EA.	2,950.00
Fire Hydrant	Relocate	EA.	2,400.00
Fire Hydrant (W-10)	New, 2-way	EA.	3,900.00
Fire Hydrant	New, 3-way	EA.	4,500.00
Multiple Service	W-23	EA.	620.00
Valves	4"	EA.	620.00
	6"	EA.	1,500.00
	8"	EA.	2,400.00
	10"	EA.	3,500.00
	12"	EA.	4,300.00
	16"	EA.	5,200.00
	8" Pressure, Reducing w/ box	EA.	10,500.00
Water Main (all materials)	W-21,		
	W-21, 4"	L.F.	40.00

	W-21, 6"	L.F.	50.00
	W-21, 8"	L.F.	58.00
	W-21, 10"	L.F.	63.00
	W-21, 12"	L.F.	70.00
	W-21, 16"	L.F.	89.00
	W-21, 20" (CL-150)	L.F.	100.00
Water Service w/ meter	1" w/1 x .75" meter (W-1)	EA.	18,000.00
	1" w/1" meter (W-1)	EA.	25,000.00
	2" w/1.5" meter (W-2)	EA.	45,000.00
	2" w/2" meter (W-2)	EA.	65,000.00
	2-2" w/2-2" meter, manifold	EA.	65,000.00
Water Service w/o Meter	1", W-1	EA.	2,400.00
	2", W-2	EA.	2,520.00
	2-2", W-2	EA.	3,800.00

MISCELLANEOUS

ITEM	DESCRIPTION	UNIT	PRICE
Bridge (Vehicular)		S.F.	300.00
Bridge (Pedestrian)		S.F.	273.00
Crash Cushion	G.R.E.A.T.	EA.	40,200.00
Excavation	For Structures	C.Y.	66.00
Fence	Chain Link, 4'	L.F.	32.00
(M-6)	Chain Link, 5'	L.F.	35.00
	Chain Link, 6'	L.F.	38.00
Guard Rail	Metal Beam	L.F.	47.00
	(M-30-38)		
Guard Post	M-9	EA.	480.00
Guard Barricade	M-9	EA.	590.00
Median Barrier	Type 50, PCC	EA.	70.00
Saw Cut	AC/PCC Pvt.	L.F.	4.40
Shoring	5-10' deep	L.F.	12.40
	11-15' deep	L.F.	19.00
	16-20' deep	L.F.	27.00
Survey Monument	M-10	EA.	875.00
Wall, Retaining	Masonry	S.F.	36.00
	Cast-in-place	C.Y.	1,100.00
	Gravity	S.F.	40.00
	Crib	S.F.	58.00

8.600 SUBMITTAL CHECKLIST

COUNTY OF SAN DIEGO, DEPARTMENT OF PUBLIC WORKS GRADING AND IMPROVEMENTS COUNTER

TM Improvement Plan Submittals (Public or private)

6 Bluelines and 2 bluelines (sheet #1) cover sheet
1 Copy of an approved Tentative Map
1 Copy of Resolution of Approval
2 Hydraulic and Hydrological calculations and map (200 scale) and SWMP*
2 Soils report
2 Improvement plan cost estimate

Grading Plan Submittals

1 Grading permit application (Form DPW 49 and DPL #4 00)& Right-of-Entry form signed by owner(s) [Original signature]
1 Endangered species form (form DEH: BLDG-252)
4 Bluelines
2 Soils report
2 Hydraulic and Hydrological calculations and map (200 scale) and SWMP*
2 Grading plan cost estimate

Curb Grade Improvements

6 Bluelines
2 Hydraulic and Hydrological calculations and map (200 scale) and SWMP*
2 Improvement plan cost estimate

TPM Improvements (Public or combined public & private)

5 Bluelines and 2 bluelines (sheet #1) cover sheet
1 Copy of an approved Tentative Map
1 Copy of Final Notice of Approval
2 Hydraulic and Hydrological calculations and map (200 scale) and SWMP*
2 Soils report (if necessary)
2 Improvement plan cost estimate

TPM Improvements (Private)

3 Bluelines
1 Copy of Final Notice of Approval
1 Copy of Tentative Parcel Map or recorded Parcel Map
2 Hydraulic and Hydrological calculations and map (200 scale) and SWMP*
2 Improvements plan cost estimate

*[SWMP = Stormwater management Plan with calculations and diagrams]

(For expedition of plan check process, it is suggested that the Grading Plan be submitted with the Improvement Plan)